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EXAMINER	
MILLS, DONALD L	

ART UNIT	PAPER NUMBER
2662	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/418,397	WHITFIELD ET AL.	
	Examiner	Art Unit	
	Donald L Mills	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 October 1999*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-81* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-81* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4*.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: page 14, line 5, "to" should be corrected to – is –. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 5, and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Arnaud et al. (US 6,650,662 B1), herein after referred to as Arnaud.

Regarding claim 1, Arnaud discloses a method and apparatus for transmitting DTMF signals, which comprises:

Examining audio signals for potential DTMF signals (Referring to Figure 2, receiving a voice traffic signal and detecting a DTMF signal. See column 5, lines 22-25.)

Preparing the audio signals for transmission as digital packets (Referring to Figure 2, traffic is assembled in packets **(205)** and transmitted. See column 5, lines 34-35.)

While no potential DTMF signals have been detected, promptly transmitting a digital packet after sufficient time has elapsed for a potential DTMF signal to be detected in the digital

packet (Referring to Figure 7, when no DTMF signal is pre-detected the voice traffic is transmitted after a delay. See column 5, lines 61-62.)

If a potential DTMF signal is detected, temporarily storing digital packets until DTMF detection can be performed (Referring to Figure 2, DTMF detector **(203)** detects and validates DTMF signals, inherently requiring the storing of packets in order to process the packets. See column 5, lines 26-28,) *and if the potential DTMF signal does not result in a DTMF detection, promptly transmitting the digital packets that were temporarily stored* (Referring to Figure 7, when no DTMF signal is pre-detected the voice traffic is transmitted after a delay. See column 5, lines 61-62,) *and if the potential DTMF signal does result in a DTMF detection, discarding the digital packets that were temporarily stored and transmitting a control packet containing information relating to characteristics of a DTMF signal that was detected* (Referring to Figures 2 and 9b, after the DTMF Detector **(203)** has determined that a candidate DTMF signal is a true DTMF signal, the DTMF signal is coded for transmission, comprising the DTMF signal characteristics. See column 5, lines 42-46 and 65-67.)

Regarding claim 5, Arnaud discloses *wherein the audio signals include digitized representations of voice signals* (Referring to Figure 2, traffic is assembled in packets **(205)**. See column 5, lines 34-35.)

Regarding claim 8, Arnaud discloses *examining the audio signals for potential DTMF signals using digital signal processing* (Referring to Figure 2, receiving a voice traffic signal and detecting a DTMF signal, which inherently comprises digital signal processing in order to determine if a digital packet is a DTMF signal. See column 5, lines 22-25.)

4. Claims 22-81 are rejected under 35 U.S.C. 102(e) as being anticipated by Wildfeuer (US 6,298,055 B1).

Regarding claims 22 and 30, Wildfeuer discloses a method for early detection of DTMF signals, which comprises:

Sampling/A sampler capable of sampling a portion of the audio signal to generate a plurality of samples (Referring to Figure 4, a digitized audio stream **20**, inherently comprising sampling of an audio signal in order to create stream. See column 4, line 32.)

Digitizing/A digitizer capable of digitizing the plurality of samples to generate a plurality of digitized samples (Referring to Figure 4, a digitized audio stream **20** is supplied. See column 4, lines 32.)

Detecting/A detector capable of detecting an energy indicative of the first frequency tone in the portion (Referring to Figure 4, detecting potential in-band signal. See column 4, line 49.)

Stalling/A processor capable of stalling the transmission of the digitized samples in response to the detecting (Referring to Figure 4, encoded voice data **70** transferred into frame delay buffer **66** while presence or absence of an in-band signal, DTMF, is resolved. See column 4, lines 50-52.)

Confirming the sample includes the DTMF signal (Referring to Figure 4, encoded voice data **70** transferred into frame delay buffer **66** while presence or absence of an in-band signal is resolved. See column 4, lines 50-52.)

Generating/Wherein the processor is further capable of generating a packet indicative of the DTMF signal, discarding the digitized samples and transmitting the packet, in response to

the confirming (Referring to Figure 7, a DTMF signal, packetized, is detected and transmitted if valid, and voice packets stored in buffer **66** are flushed. See column 7, lines 19-21.)

Regarding claim 23, 31, 40, 49, 60, 61, 69, 72, 75, 78, and 81 Wildfeuer discloses *wherein the first frequency is/confirms existence of a high frequency and the second frequency is a low frequency* (Referring to **Table 1**, detect signal strength at or near appropriate low/high band DTMF tone center frequency pairs. See column 5, lines 30-31.)

Regarding claim 24, 32, 41, 50, 58, 67, 73, and 79, Wildfeuer discloses *wherein the detecting uses a wideband energy detector* (Referring to **Table 1**, detect signal strength at or near appropriate low/high band DTMF tone center frequency pairs. See column 5, lines 30-31.)

Regarding claim 25, 33, 42, 51, 59, 68, 74, and 80, Wildfeuer discloses *wherein the detecting compares the energy with a high threshold and a low threshold* (Referring to **Table 1**, detect signal strength at or near appropriate low/high band DTMF tone center frequency pairs. See column 5, lines 30-31.)

Regarding claim 26, 34, 43, and 52, Wildfeuer discloses *wherein the conforming confirms an existence of the first frequency and the second frequency in the portion* (Referring to **Table 1**, detect signal strength at or near appropriate low/high band DTMF tone center frequency pairs. See column 5, lines 30-31.)

Regarding claim 27, 35, 44, 53, and 62, Wildfeuer discloses *wherein the confirming confirms a frequency tolerance of each tone* (Referring to **Table 1**, detect signal strength at or near appropriate low/high band DTMF tone center frequency pairs. See column 5, lines 30-31.)

Regarding claim 28, 36, 45, 54, and 63, Wildfeuer discloses *wherein the confirming confirms a frequency deviation of each tone* (Referring to **Table 1**, detect signal strength at or near appropriate low/high band DTMF tone center frequency pairs. See column 5, lines 30-31.)

Regarding claim 29, 37, 46, 55, and 64, Wildfeuer discloses *wherein the confirming confirms a twist in the portion* (Referring to **Table 1**, detect signal strength at or near appropriate low/high band DTMF tone center frequency pairs. See column 5, lines 30-31.)

Regarding claim 38, Wildfeuer discloses a method for early detection of DTMF signals, which comprises:

Analyzing a portion of the audio signal to detect an element indicative of the DTMF (Referring to Figure 4, from digitized audio stream **20**, detecting potential in-band signal, DTMF. See column 4, lines 44 and 49.)

Stalling the transmission of the portion if the analyzing detects the element, else continuing the transmission of the portion (Referring to Figure 4, encoded voice data **70** transferred into frame delay buffer **66** while presence or absence of an in-band signal, DTMF, is resolved, and allows encoded voice data **70** to proceed unimpeded if no DTMF has been detected. See column 4, lines 50-52 and 47-50.)

Processing the portion, in response to the stalling, to confirm the portion includes the DTMF signal (Referring to Figure 7, when a potential DTMF signal is detected three different processing paths are possible to determine if the DTMF signal is valid. See column 7, lines 12-13.)

Discarding the portion, generating a packet indicative of the DTMF signal and transmitting the packet if the processing confirms the portion includes the DTMF signal, else

continuing the transmission of the portion (Referring to Figure 7, a DTMF signal, packetized, is detected and transmitted if valid, and voice packets stored in buffer **66** are flushed, if no potential DTMF signal is detected the packets are queued for transmission. See column 7, lines 19-21 and 4-6.)

Regarding claims 39, 48, 57, 66, 71, and 77, Wildfeuer discloses *wherein the element is an energy of the first frequency* (Referring to Figure 4, detecting potential in-band signal, DTMF. See column 4, lines 44 and 49.)

Regarding claim 47, Wildfeuer discloses a method for early detection of DTMF signals, which comprises:

A processor capable of analyzing a portion of the audio signal to detect an element indicative of the DTMF (Referring to Figure 4, from digitized audio stream **20**, detecting potential in-band signal, DTMF. See column 4, lines 44 and 49,) *wherein the processor stalls the transmission of the portion if the processor detects the element, else the processor continues the transmission of the portion* (Referring to Figure 4, encoded voice data **70** transferred into frame delay buffer **66** while presence or absence of an in-band signal, DTMF, is resolved, and allows encoded voice data **70** to proceed unimpeded if no DTMF has been detected. See column 4, lines 50-52 and 47-50.)

Wherein the processor processes the portion, in response to the stalling, to confirm the portion includes the DTMF signal (Referring to Figure 7, when a potential DTMF signal is detected three different processing paths are possible to determine if the DTMF signal is valid. See column 7, lines 12-13,) *and wherein the processor discards the portion, generates a packet indicative of the DTMF signal and transmits the packet if the processor confirms the portion*

includes the DTMF signal, else the processor continues the transmission of the portion (Referring to Figure 7, a DTMF signal, packetized, is detected and transmitted if valid, and voice packets stored in buffer **66** are flushed, if no potential DTMF signal is detected the packets are queued for transmission. See column 7, lines 19-21 and 4-6.)

Regarding claims 56, 65, and 70, Wildfeuer discloses a method for early detection of DTMF signals, which comprises:

Detecting/Means for/Code for detecting an element indicative of the DTMF (Referring to Figure 4, detecting potential in-band signal, DTMF. See column 4, lines 44 and 49.)

Stalling/Means for/Code for stalling the transmission of the portion, in response to the detecting (Referring to Figure 4, encoded voice data **70** transferred into frame delay buffer **66** while presence or absence of an in-band signal, DTMF, is resolved. See column 4, lines 50-52.)

Confirming/Means for/Code for confirming the portion includes the DTMF signal (Referring to Figure 7, when a potential DTMF signal is detected three different processing paths are possible to determine if the DTMF signal is valid. See column 7, lines 12-13.)

Discarding/Means for/Code for discarding the portion, generating a packet indicative of the DTMF signal and transmitting the packet, in response to the confirming (Referring to Figure 7, voice packets stored in buffer **66** are flushed if a valid DTMF signal is detected and transmitted. See column 7, lines 19-21.)

Regarding claim 76, Wildfeuer discloses a method for early detection of DTMF signals, which comprises:

A detector capable of detecting an element indicative of the DTMF (Referring to Figure 4, detecting potential in-band signal, DTMF. See column 4, lines 44 and 49.)

A processor capable of stalling the transmission of the portion, in response to the detector detecting the element indicative of the DTMF (Referring to Figure 4, encoded voice data **70** transferred into frame delay buffer **66** while presence or absence of an in-band signal, DTMF, is resolved. See column 4, lines 50-52,) *confirming the portion includes the DTMF signal* (Referring to Figure 7, when a potential DTMF signal is detected three different processing paths are possible to determine if the DTMF signal is valid. See column 7, lines 12-13,) *discarding the portion, generating a packet indicative of the DTMF signal and transmitting the packet* ((Referring to Figure 7, voice packets stored in buffer **66** are flushed if a valid DTMF signal is detected and transmitted. See column 7, lines 19-21.)

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 2-4, 6, 7, 9, 10, and 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arnaud et al. (US 6,650,662 B1), herein after referred to as Arnaud, in view of Kozdon et al. (US 6,385,192 B1), hereinafter referred to as Kozdon.

Regarding claim 2 as explained above in the rejection statement of claim 1, Arnaud discloses all of the claim limitations of claim 1 (parent claim). Arnaud does not disclose *preparing the audio signals for transmission as RTP packets.*

Kozdon teaches placing the compressed telephone signals and codes representing the DTMF onto virtual channels of a real time protocol (RTP) data stream (See column 5, lines 11-15.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the method of Arnaud in the system of Kozdon. One of ordinary skill in the art would have been motivated to do so in order to transmit real time protocol traffic and DTMF signals with only features essential for reconstituting the DTMF signal as taught by Arnaud (See column 4, lines 20-21.)

Regarding claim 3 as explained above in the rejection statement of claim 1, Arnaud discloses all of the claim limitations of claim 1 (parent claim). Arnaud does not disclose *transmitting the digital packets over an IP network.*

Kozdon teaches transmitting voice signals, digitally packetized, on a computer network **112** such as the Internet (See column 5, lines 5-9.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the method of Arnaud in the system of Kozdon. One of ordinary skill in the art would have been motivated to so in order to transmit DTMF signals with only features essential for reconstituting the DTMF signal in an IP network as taught by Arnaud (See column 4, lines 20-21.).

Regarding claim 4 as explained above in the rejection statement of claim 1, Arnaud discloses all of the claim limitations of claim 1 (parent claim). Arnaud does not disclose *transmitting the RTP packets over an IP network.*

Kozdon teaches placing the compressed telephone signals and codes representing the DTMF onto virtual channels of a real time protocol (RTP) data stream (See column 5, lines 11-15.) Kozdon further teaches transmitting voice signals, digitally packetized, on a computer network **112** such as the Internet (See column 5, lines 9-10.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the method of Arnaud in the system of Kozdon. One of ordinary skill in the art would have been motivated to do so in order to transmit real time protocol traffic and DTMF signals with only features essential for reconstituting the DTMF signal in an IP network as taught by Arnaud (See column 4, lines 20-21.)

Regarding claims 6 and 7, the primary reference further discloses *wherein the audio signals include digitized representations of voice signals* (Referring to Figure 2, traffic is assembled in packets **(205)**. See column 5, lines 34-35.)

Regarding claims 9 and 10, the primary reference further discloses *examining the audio signals for potential DTMF signals using digital signal processing* (Referring to Figure 2, receiving a voice traffic signal and detecting a DTMF signal, which inherently comprises digital signal processing in order to determine if a digital packet is a DTMF signal. See column 5, lines 22-25.)

Regarding claims 17, Arnaud discloses a method and apparatus for transmitting DTMF signals, which comprises:

Processing digital representations of audio signals to detect potential DTMF signals (Referring to Figure 2, receiving a voice traffic signal and detecting a DTMF signal. See column 5, lines 22-25.)

In a first mode of operation while no potential DTMF signal has been detected:

(a) preparing the digital representations of audio signals for transmission as packets

(b) transmitting a packet over a network after a predetermined period of time sufficient to allow the step of processing digital representations of audio signals to detect potential DTMF signals to be completed for the packet (Referring to Figure 7, when no DTMF signal is pre-detected the voice traffic is transmitted after a delay, which inherently comprises preparing the signal for transmission. See column 5, lines 61-62.)

In a second mode of operation when a potential DTMF signal has been detected, preparing the digital representations of audio signals for potential transmission as packets, and temporarily storing such packets while the potential DTMF signal is processed to verify whether it is a valid DTMF signal (Referring to Figure 2, DTMF detector **(203)** detects and validates DTMF signals, inherently requiring the storing of packets in order to process the packets. See column 5, lines 26-28;)

(a) if the potential DTMF signal is determined to not be a valid DTMF signal, transmitting the packets that were temporarily stored over a network (Referring to Figure 7, when no DTMF signal is pre-detected the voice traffic is transmitted after a delay. See column 5, lines 61-62;)

(b) if the potential DTMF signal is determined to be a valid DTMF signal; discarding the packets that were temporarily stored, preparing a control packet containing information indicative of characteristics of a DTMF signal, and transmitting the control packet over a network (Referring to Figures 2 and 9b, after the DTMF Detector **(203)** has determined that a candidate DTMF signal is a true DTMF signal, the DTMF signal is coded for transmission, comprising the DTMF signal characteristics. See column 5, lines 42-46 and 65-67.) Arnaud does not disclose *RTP packets* and *IP network.*

Kozdon teaches placing the compressed telephone signals and codes representing the DTMF onto virtual channels of a real time protocol (RTP) data stream (See column 5, lines 11-15.) Kozdon further teaches transmitting voice signals, digitally packetized, on a computer network **112** such as the Internet (See column 5, lines 9-10.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the method of Arnaud in the system of Kozdon. One of ordinary skill in the art would have been motivated to do so in order to transmit real time protocol traffic and DTMF signals with only features essential for reconstituting the DTMF signal in an IP network as taught by Arnaud (See column 4, lines 20-21.)

Regarding claim 18 as explained above in the claim rejection of claim 17, Arnaud and Kozdon disclose all of the claim limitations of claim 17 (parent claim). Arnaud further discloses a method and apparatus for transmitting DTMF signals, which comprises:

Receiving the packets at a remote location coupled to a network (Referring to Figure 2, a Receiver Interface **(207)** receives incoming packets at the other side of the network. See column 5, lines 53-54.)

Decoding the packets to recover digital representations of audio signals (Referring to Figure 2, voice decompression system **(208)** decompresses voice packets. See column 5, lines 56-57.)

Converting digital representations of audio signals to analog signals (Referring to Figure 2, voice signal is sent to the end user. See column 5, lines 58-60.)

Receiving a control packet at a remote location couple to the network (Referring to Figure 2, coded DTMF packets are received at the Receiver Interface **(207)**. See column 5, lines 53-56.)

Generating DTMF signals having characteristics determined by information contained in the control packets (Referring to Figure 2, the corresponding DTMF packets are sent to a DTMF generator **(209)** then sent to the end user. See column 5, lines 54-60.) Arnaud does not disclose *RTP packets* or *IP network.*

Kozdon teaches placing the compressed telephone signals and codes representing the DTMF onto virtual channels of a real time protocol (RTP) data stream (See column 5, lines 11-15.) Kozdon further teaches transmitting voice signals, digitally packetized, on a computer network **112** such as the Internet (See column 5, lines 9-10.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the method of Arnaud in the system of Kozdon. One of ordinary skill in the art would have been motivated to do so in order to transmit real time protocol traffic and DTMF signals with only features essential for reconstituting the DTMF signal in an IP network as taught by Arnaud (See column 4, lines 20-21.)

Regarding claim 19, Arnaud discloses a method and apparatus for transmitting DTMF signals, which comprises:

A telephony interface (Referring to Figure 1, a telephone set **(100)**. See column 5, lines 4-5.)

A digital processor coupled to the telephony interface for processing digital representations of audio signals to detect potential DTMF signals (Referring to Figure 2, receiving a voice traffic signal and detecting a DTMF signal, inherently utilizing a processor to process packets. See column 5, lines 22-25.)

A microcontroller coupled to the digital processor, the microcontroller being operative to prepare the digital representations of audio signals for transmission as packets

Memory coupled to the microcontroller for temporarily storing packets (Referring to Figure 7, when no DTMF signal is pre-detected the voice traffic is transmitted after a delay, which inherently comprises a processor for preparing the signal for transmission and memory for storing the packets. See column 5, lines 61-62.)

A control register coupled to the digital processor and readable by the microcontroller, the control register including a flag bit indicative of the status of detection of a potential DTMF signal, the control register including one or more flag bits indicative of the detection of a valid DTMF signal (Referring to Figure 2, DTMF Detector **(203)** determines if the candidate DTMF signal is a true DTMF signal and not voice traffic, which inherently utilizes a memory to indicate the status of the received signal which is read by a processor. See column 5, lines 43-45.)

A network interface coupled to the microcontroller for coupling packets to a network (Referring to Figure 1, a telephone set **(100)** is linked via a subscriber line to a network,

inherently comprising a network interface to transmit packets between sources. See column 5, lines 3-5.)

Wherein when the flag bit indicative of the status of detection of a potential DTMF signal is not set, packets are promptly coupled to the network interface for transmission over the network (Referring to Figure 7, when no DTMF signal is pre-detected the voice traffic is transmitted after a delay, which inherently comprises preparing the signal for transmission. See column 5, lines 61-62,) *and when the flag bit indicative of the status of detection of a potential DTMF signal is set, packets are temporarily stored in the memory while the digital processor performs additional DTMF detection processing* (Referring to Figures 2 and 9b, after the DTMF Detector **(203)** has determined that a candidate DTMF signal is a true DTMF signal, the DTMF signal is coded for transmission, comprising the DTMF signal characteristics. See column 5, lines 42-46 and 65-67,) *and if the flag bit indicative of the status of detection of a potential DTMF signal is reset and a flag bit indicative of the detection of a valid DTMF signal is not set, the packets temporarily stored in the memory are promptly coupled to the network interface for transmission over the network* (Referring to Figure 7, when no DTMF signal is pre-detected the voice traffic is transmitted after a delay, which inherently comprises preparing the signal for transmission. See column 5, lines 61-62,) *and if a flag bit indicative of the detection of a valid DTMF signal is set, the packets temporarily stored in the memory are discarded and a control packet is prepared by the micro controller where the control packet contains information indicative of characteristics of a DTMF signal and the control packet is coupled to the network interface for transmission over the network* (Referring to Figures 2 and 9b, after the DTMF Detector **(203)** has determined that a candidate DTMF signal is a true DTMF signal, the DTMF

signal is coded for transmission, comprising the DTMF signal characteristics. See column 5, lines 42-46 and 65-67.) Arnaud does not disclose *RTP packets* and *an IP network.*

Kozdon teaches placing the compressed telephone signals and codes representing the DTMF onto virtual channels of a real time protocol (RTP) data stream (See column 5, lines 11-15.) Kozdon further teaches transmitting voice signals, digitally packetized, on a computer network **112** such as the Internet (See column 5, lines 9-10.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the method of Arnaud in the system of Kozdon. One of ordinary skill in the art would have been motivated to do so in order to transmit real time protocol traffic and DTMF signals with only features essential for reconstituting the DTMF signal in an IP network as taught by Arnaud (See column 4, lines 20-21.)

Regarding claims 20 and 21 as explained above in the rejection statement of claim 19, Arnaud and Kozdon disclose all of the claim limitations of claim 19 (parent claim). Arnaud further discloses a method and apparatus for transmitting DTMF signals, which comprises:

A second network interface coupled to the network at a remote location (Referring to Figure 2, a Receiver Interface **(207)** receives incoming packets at the other side of the network, inherently comprising a network interface in order to receive packets. See column 5, lines 53-54.)

A second microcontroller coupled to the second network interface (Referring to Figure 2, voice decompression system **(208)** decompresses voice packets. See column 5, lines 56-57.)

A digital-to-analog converter coupled to the second microcontroller for converting digital representations of audio signals to analog signals (Referring to Figure 2, voice signal is

sent to the end user, inherently comprising a D/A converter controlled by a processor. See column 5, lines 58-60.)

A DTMF signal generator coupled to the second microcontroller for generating (Claim 20)/A second digital processor operative to generate DTMF signals having characteristics determined by information contained in the control packets (Claim 21) (Referring to Figure 2, the corresponding DTMF packets are sent to a DTMF generator **(209)** then sent to the end user, which inherently comprises a processor to process packets. See column 5, lines 54-60.) Arnaud does not disclose *RTP packets* or *IP network.*

Kozdon teaches placing the compressed telephone signals and codes representing the DTMF onto virtual channels of a real time protocol (RTP) data stream (See column 5, lines 11-15.) Kozdon further teaches transmitting voice signals, digitally packetized, on a computer network **112** such as the Internet (See column 5, lines 9-10.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the method of Arnaud in the system of Kozdon. One of ordinary skill in the art would have been motivated to do so in order to transmit real time protocol traffic and DTMF signals with only features essential for reconstituting the DTMF signal in an IP network as taught by Arnaud (See column 4, lines 20-21.)

7. Claims 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arnaud et al. (US 6,650,662 B1), herein after referred to as Arnaud, in view of Kozdon et al. (US 6,385,192 B1), hereinafter referred to as Kozdon, further in view of Schulzrinne (ietf-avt-dtmf-01.txt).

Regarding claim 11 as explained above in the rejection statement of claim 1, Arnaud discloses all of the claim limitations of claim 1 (parent claim). Arnaud does not disclose *when*

the potential DTMF signal does result in a DTMF detection, preparing a control packet comprising 32 bits of information having a format of: RRRNNNNNRRVVVVVVDDDDDDDDDDDDDDDD where "R" designates reserved bits; "N" designates bits of data representative of a DTMF digit; "V" designates bits of data representing the power level of the DTMF signal, expressed in dBm0 after dropping the sign; and "D" designates bits of data indicating a duration for a DTMF signal, in timestamp units.

Schulzrinne teaches a payload format 32-bits long which comprises five reserve bits, five bits for DTMF digit encoding, six bits for volume or power level, and sixteen bits for duration in timestamp units (See pages 2-3.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement RTP payload for DTMF digits of Schulzrinne in the system of Kozdon utilizing the method of Arnaud. One of ordinary skill in the art would have been motivated to do so in order to support DTMF digits in RTP packets as taught by Schulzrinne (See page 1, paragraph 4.)

Regarding claim 12 as explained above in the rejection statement of claim 1, Arnaud discloses all of the claim limitations of claim 1 (parent claim). Arnaud does not disclose *the "N" bits of data representative of a DTMF digit are encoded so that the following encoded data represents the indicated DTMF digit:*

An encoded "0" represents a DTMF digit of 0

An encoded "1" represents a DTMF digit of 1

An encoded "2" represents a DTMF digit of 2

An encoded "3" represents a DTMF digit of 3

An encoded "4" represents a DTMF digit of 4

An encoded "5" represents a DTMF digit of 5

An encoded "6" represents a DTMF digit of 6

An encoded "7" represents a DTMF digit of 7

An encoded "8" represents a DTMF digit of 8

An encoded "9" represents a DTMF digit of 9

*An encoded "10" represents a DTMF digit of **

An encoded "11" represents a DTMF digit of #

An encoded "12" represents a DTMF digit of A

An encoded "13" represents a DTMF digit of B

An encoded "14" represents a DTMF digit of C

An encoded "15" represents a DTMF digit of D

Schulzrinne teaches a payload format 32-bits long which comprises five bits for DTMF digit encoding wherein an encoded 0-15 corresponds to 0-9, *, #, and A-D respectively (See page 3.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement RTP payload for DTMF digits of Schulzrinne in the system of Kozdon utilizing the method of Arnaud. One of ordinary skill in the art would have been motivated to do so in order to support DTMF digits in RTP packets as taught by Schulzrinne (See page 1, paragraph 4.)

Regarding claim 13 as explained above in the rejection statement of claim 1, Arnaud discloses all of the claim limitations of claim 1 (parent claim). Arnaud does not disclose *an encoded "16" represents a Flash.*

Schulzrinne teaches a payload format 32-bits long which comprises five bits for DTMF digit encoding wherein an encoded 16 corresponds to Flash (See page 3.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement RTP payload for DTMF digits of Schulzrinne in the system of Kozdon utilizing the method of Arnaud. One of ordinary skill in the art would have been motivated to do so in order to support DTMF digits in RTP packets as taught by Schulzrinne (See page 1, paragraph 4.)

Regarding claims 14-16 as explained above in the rejection statement of claim 1, Arnaud discloses all of the claim limitations of claim 1 (parent claim). Arnaud does not disclose *wherein the reserve bits are set to zero.*

Schulzrinne teaches a payload format 32-bits long which comprises five reserve bits, which are set to zero (See pages 2-3.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement RTP payload for DTMF digits of Schulzrinne in the system of Kozdon utilizing the method of Arnaud. One of ordinary skill in the art would have been motivated to do so in order to support DTMF digits in RTP packets as taught by Schulzrinne (See page 1, paragraph 4.)

Conclusion

8. Applicant is advised that should claim 1 be found allowable, claims 5-7, 8-10, and 14-16 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald L Mills whose telephone number is 703-305-7869. The examiner can normally be reached on 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 703-305-4744. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

Donald L Mills
December 24, 2003

KENNETH VANDERPUYE
PRIMARY EXAMINER